HABITUAL ABORTION OR MISCARRIAGE.*

By ELSIE V. CROWE, F.R.C.S.E.

It is a well-known clinical fact that habitual abortion or miscarriage is by no means always associated with spirochætal infection, and during the past two years no fewer than nineteen such non-specific cases have come up to the Antenatal Department of the Royal Maternity Hospital with their pathetic and depressing stories of repeated abortions and miscarriages.

The curious similarity of type of these nineteen women, their almost identical obstetrical histories and the gratifying response of the majority to the same lines of treatment seemed a warrant that a brief clinical record of their cases might be of some interest to this Society, and I have to thank the Senior Physicians of the Royal Maternity Hospital for their kind permission to bring it before you this evening.

By habitual abortion or miscarriage I mean, of course, an obstetrical history consisting of an almost uninterrupted series of abortions, miscarriages and very premature labours, but it is interesting to note that in nine of the nineteen cases to be described this series of abnormal pregnancies was initiated by a full-time, often instrumental labour, preceded in its turn by an apparently normal pregnancy. The tragedy of habitual abortion is not only a source of much individual discomfort and unhappiness, but also a problem of real social and economic importance, and it may therefore be justifiable to consider so small a number as nineteen cases, if their analysis throws any light on the two questions which at once present themselves: (1) What is the cause of habitual abortion? (2) How can it be prevented? I suppose the correct answer to the first question would lead inevitably to the solution of the second.

Possible Etiology.—A routine systematic examination revealed the fact that two of the nineteen patients were suffering from both toxæmia of pregnancy and chronic infection of the cervix, three from cervicitis alone and one from toxæmia complicated by pyelitis: two others had severe valvular disease of the heart. As far as their general condition was concerned

* Read 11th June 1930, under the auspices of the Medical Research Council.

these eight may be added to the remaining eleven, who have been labelled "general debility."

This rather vague term (debility) includes poor health associated with fairly marked anæmia, for, as I have already mentioned, one of the most striking things about these nineteen women was their physical resemblance—in other words they *all* looked ill, and were, for the most part, thin, sallow and listless, complaining of headaches, constipation, loss of appetite and of strength. All had a negative Wassermann reaction and subsequent examinations revealed no evidence of syphilis. All had enjoyed fairly good health until the occurrence of their first pregnancy, for which the majority blamed their present ill-health. Most of them lived in the poorer districts of Edinburgh, where both fresh air and sunlight may have been lacking to a large extent.

The average number of pregnancies was five in the short space of 5½ years—a fact of some significance. Their ages varied from 20 to 40 years.

A search for focal sepsis discovered the already mentioned five cases of cervicitis and the one chronic pyelitis associated with toxæmia. Dental caries or pyorrhœa was present in eleven of the nineteen, septic tonsils in five—a fairly high percentage.

Apart from the three cases of definite toxæmia of pregnancy, there was no albuminuria nor infection of the urinary tract, and again excepting the three toxic patients, the blood pressures were uniformly low (average 100/70) during the fairly long periods of observation.

In his recently published work on the causes of eclampsia and other toxæmias of pregnancy, Theobald states that "it is probable that human abortions, for the majority of which no adequate explanation can be offered, may be caused by a deficiency in the diet," and he goes on to show how the growing fœtus causes a great and increasing depletion of the maternal stores of iron, iodine, sugar and especially of calcium, without which the liver cannot carry on its work of detoxication. To this hepatic failure to deal with the toxins of both fœtal and maternal metabolism Dr Theobald ascribes the cause of toxæmia of pregnancy, and it is possible that it is also the cause of habitual abortion. At any rate it is on such a theory of dietary deficiencies that our simple treatment has been based, and the results obtained have been its justification in the majority of cases.

Treatment.—For convenience the nineteen cases have been divided into three groups, *A*, *B*, *C*.

A consists of those still under treatment—*i.e.* undelivered .	3
B are the failures where abortion again occurred . .	8
C are the successes—those who were delivered at or near term of living children	8

Group A includes a case of toxæmia with chronic cervicitis and pyelitis, a cervicitis without toxic symptoms and a "debility." This group may be disposed of at once, as each patient is receiving the appropriate local and general treatment described in connection with groups *B* and *C*, where results are considered. The three patients of group *A* have reached the seventh month of their present pregnancy and abortion has not yet taken place. *Group B:* the eight failures must be considered in some detail. It includes one toxæmia of pregnancy, one cervicitis and one cardiac disease—the other five cases showed the anæmia and general debility already described.

No 1. Mrs M'C., aged 34, gave a history of scarlet fever and diphtheria in childhood and of a first pregnancy in 1916 ending in the instrumental delivery of a still-born child and followed by six miscarriages at the fifth or seventh month of gestation—the last pregnancy at least being associated with generalised œdema, albuminuria and a raised blood pressure. She again became pregnant and came under observation at the third month, when a course of intravenous neokharsivan was given (0·3 gm. a week for eighteen weeks). The patient was put on a low-protein, salt-free diet consisting largely of fresh milk, fruit and vegetables with plenty of sugar and other carbohydrates, and extract of malt and cod-liver oil three times a day. Her general health improved greatly, her colour returned and she put on a considerable amount of weight. All went well until the seventh month, when albumin appeared in the urine and the blood pressure rose to 144 mm. Hg, and in spite of complete rest in bed and active eliminative treatment the patient miscarried two weeks later. The fœtus was macerated.

No. 2. Mrs B., aged 26, came to us with the history of a forceps delivery of a 12-lb. baby in 1924, followed by four miscarriages. She was then three and a half months pregnant and threatening to abort. Rest in bed, a low-protein diet, malt and cod-liver oil, etc. only delayed the miscarriage for eight weeks. No treatment of the cervicitis was carried out.

No. 3. Mrs W., aged 31, had aortic incompetence and mitral stenosis with a history of acute rheumatism. She had had six miscarriages in the last seven years and was again three months pregnant, with a blood pressure of 170 systolic. The blood pressure remained high in spite of complete rest in bed and albuminuria appeared at the sixth and a half month, three days before the patient miscarried.

No. 4. Mrs R., aged 36, had had three full-time labours, followed by four miscarriages, and was first seen on 28th February of this year. She complained of headaches and great weakness and looked very ill, but no organic lesion was found. She was put on to a carbohydrate diet with large doses of alkalies, and on 23rd March was given 0·3 gm. of intravenous neokharsivan. On 4th April she was delivered of macerated seventh-month twins and died ten days later of acute lepto-meningitis and bronchopneumonia, part of a wide-spread bacillus coli blood infection.

No. 5. Mrs G., aged 24, had had two abortions within eleven months and attended the antenatal clinic for only two weeks before she expelled a hydatid mole. She was given large amounts of fresh milk and a proprietary preparation of calcium and her general health definitely improved during the fortnight of antenatal care.

No. 6. Mrs T., aged 26, had one normal labour followed by three miscarriages and came to the antenatal clinic in June 1929, being then about three months pregnant. She had very bad pyorrhœa but refused to have it treated. Unfortunately no special dietary or other treatment was given her and she miscarried again in October. This case is the least creditable of the whole series, as the lack of really careful antenatal care may be the cause of its failure. She is again two months pregnant and has started a course of "tonic" neokharsivan and special diet.

No. 7. Mrs S., aged 29, had had three miscarriages in spite of appendectomy and four curettings. She was exceedingly anæmic and was given a course of intravenous arsenic as soon as the first period was missed, and a carefully supervised diet similar to those already described. All went well until the sixth month of pregnancy, when Mrs S. became jaundiced and very sick. There was no albuminuria but the patient miscarried two weeks later.

No. 8. Mrs G., aged 33, is the most encouraging of this series of failures. She had had five miscarriages and attended the antenatal clinic throughout her sixth pregnancy. She was given a weekly injection of 0·3 gm. neokharsivan, with excellent results as far as her general condition was concerned. Unfortunately she again miscarried at the fifth month. Since then she has had her carious teeth removed and had a "postnatal" course of arsenic, and now looks the picture of health.

Group C.—The successes, which include a toxæmia of pregnancy, a cardiac disease and a cervicitis.

No. 1. Mrs W., aged 25, gave a history of scarlet fever and of three abortions. She first came to the antenatal clinic when four months pregnant with a blood pressure of 155/120 but no albuminuria. Her toxæmic condition responded fairly well to a carbohydrate diet with large amounts of fruit, fluids and alkalies. The blood pressure fell and remained at 130 systolic until the eighth month of pregnancy, when it began to rise again—generalised œdema and albuminuria appearing the day before the onset of labour, which was induced with spontaneous delivery of a 5¼-lb. baby.

No. 2. Mrs G., aged 27, has advanced mitral stenosis and a history of chorea and acute rheumatism in childhood. She had had three miscarriages and one 6½-lb. baby which died soon after birth. She first came under observation when six and a half months pregnant, being then very anæmic and on the verge of cardiac failure. Rest, tincture of digitalis and intravenous arsenic worked wonders, and she was successfully delivered of a 6½-lb. baby in May 1929. She came again in April 1930 already six months pregnant and having had no antenatal care of any kind. The impending cardiac failure was again averted by digitalis and rest at home, where she miscarried two weeks later.

No. 3. Mrs S., aged 31, had an instrumental delivery in 1919 followed by five miscarriages. A cervical repair was then done and the next pregnancy went on to term, but was followed by two more miscarriages. In 1928 she came to the antenatal clinic, where the cervical catarrh was treated with local applications of 2 per cent. picric acid and her general debility by injections of arsenic and a diet rich in sugar and

calcium. Her health greatly improved and she was delivered at term of a healthy baby. She is again five and a half months pregnant and on the same low-protein diet, but is no longer anæmic and has had no more neokharsivan.

No. 4. Mrs P., aged 29. The first pregnancy was complicated by excessive vomiting and ended at the thirty-eighth week (twins), and was followed by two miscarriages at the fourth and fifth month of gestation. Mrs P. had antenatal care during the last four months of her next pregnancy and was given large doses of alkalies and calcium. She had an 8-lb. baby in January 1929 and continued to attend the hospital as a postnatal patient. She was still rather anæmic and was given iron. She is now six months pregnant and very well on the same diet as before.

No. 5. Mrs R., aged 21, had had three miscarriages when she came to the clinic in 1928. She had only seven weeks' treatment (of intravenous arsenic) before her baby was born. It weighed 4 lb. and died of prematurity. She became pregnant again in 1929 and had six months antenatal care, including thirteen injections of intravenous neokharsivan. The baby was only 5 lb. at birth but is doing very well.

No. 6. Mrs H., aged 33, had a full-time baby ten years ago and three abortions. She first came to the clinic on 5th February of this year complaining of severe backache and, like all the others, was very anæmic. She was given the diet already described with alkalies and a course of neokharsivan and was delivered of a full-time baby on 4th May.

No. 7. Mrs E., aged 32, had two abortions in 1928. She had antenatal care from the tenth week of her third pregnancy and was delivered of a healthy 8-lb. baby. She herself is very well.

No. 8. Mrs R., aged 29, had had four full-time pregnancies and two miscarriages followed by a series of six abortions. She came under observation at the second month of her thirteenth pregnancy. She was very white and thin and looked miserable. She had a "tonic" course of intravenous arsenic—0·3 gm. a week throughout the pregnancy. Her general health improved in a really amazing way and she was safely delivered of a 5¼-lb. baby. Patrick now weighs 15 lb. and is almost too heavy for the hospital scales. His mother brings him up from time to time to be admired. She herself remains perfectly fit and has introduced several of her friends to the department.

This concludes the successful series and perhaps the chief merit of the treatment is its simplicity. No conclusions have been drawn from this analysis, as nineteen seems too small a number of cases to be of any real value.

Discussion.

Professor Johnstone said he had learned something of this work before from Dr Crowe, and he had hoped that she would draw some conclusions from her series of cases, for it was a little difficult for them to do so immediately after listening to a succession of histories. Although he was no authority on syphilology he wondered how far in these cases there was an element of occult syphilis. A great proportion of them had received anti-syphilitic treatment, which, apparently, was a good tonic. Another possible element in the success or not of the case was the existence or non-existence of vitamin E, which was supposed by some authorities to be necessary for the continuance of pregnancy. Apart from its immediate and direct practical value the work which Dr Crowe had so modestly brought before them opened up avenues for clinical research of the highest importance to the nation.

Dr Haultain said he had a method even more simple than that of Dr Crowe. For the last eight years all his cases of habitual abortion at Leith Hospital—two dozen at least—had been put on thyroid from the beginning of their pregnancy. Whenever a period was missed ½ grain to 1 grain a day was administered, with a double dose for the week a period would have been due had the patient not been pregnant. This was done during the first eight months of pregnancy. There had only been, to his knowledge, two failures with this treatment. How the thyroid acted was difficult to determine. It might be that its action was a hormonic one, helping in the fixation of the placenta to the uterus, or it might be that it was due to increasing the basal metabolism rate in the mother. On reading an American paper lately, he found the writer stated that sterility and abortion were very frequently due to a low basal metabolism rate.

Dr Fahmy said that he had also been in the habit of giving thyroid—1 grain a day for some weeks, with intervals of a few days at a time. Clinically, one could not help feeling that the doses of thyroid were very beneficial. As Miss Crowe had pointed out, quite apart from whether or not the particular pregnancy under consideration went to term, or whether an abortion occurred, the fact remained that, from the treatment with thyroid, the patient's general health did improve and the likelihood of the pregnancy going to term became very much greater.

It was well known that if the diet was unsuitable, the mother tended to become to some extent depleted in calcium, and any tendency to dental caries was greatly exaggerated. Thyroid and calcium alone would improve those patients very greatly; but one could not help feeling, in spite of it all, that if the patient was kept on a normal full rich diet, intravenous medication would not be necessary. Many hospital patients were underfed and undernourished and, although ordered better diet, usually complained that they could not obtain it. From that point of view one must regard Miss Crowe's results as really good—eight successful, eight failures and three so far successful. If all the patients had been in a financial position to get the food advised, then the results would probably have been better still.

Miss Crowe (in reply) said, as Professor Johnstone remarked, latent syphilis could not be excluded definitely, but the first injection of 0·3 gm. neokharsivan ought to have acted as a "provocative" dose and caused the negative Wassermann to become positive if latent spirochætal infection were present. This had not occurred in any of the cases so treated. Several of the patients had had thyroid as part of the general treatment.

She had tried to look on the patients as medical rather than obstetric cases, and had the very definite impression that they were all ill women. If they had been properly fed and housed they might not have needed such special treatment as neokharsivan injections.

The calcium was given both to aid fœtal development and to help the liver to fulfil its function of detoxication. During pregnancy the liver seems to be under a much greater strain than the kidneys, or indeed any other organ, but its handicap is less if the body supply of calcium is kept up.